Chemical Analysis Report

NW-DIST-2022-07-26-02

Florida Department of Environmental Protection
Central Laboratory
2600 Blair Stone Road
Tallahassee, FL 32399-2400
DOH Accreditation E31780

Event Description: **NW Run**
Request ID: **RQ-2022-05-23-25**
Customer: **NW-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
160 W Goverment Street
Suite 208
Pensacola, FL 32502-5794
Attn: Myranda Butler

For additional information please contact
Colin Wright, Ph.D.
Liang-Tsair Lin, Ph.D.
Kerry Tate, Ph.D.
Dr. rer. nat. Bettina Steinbock
Thekkekalathil Chandrasekhar, Ph.D, QA Officer
Phone (850) 245-8085

Certified by: Colin Wright, Program Administrator

Date Certified: 11-AUG-2022 08:55

NON-CONFORMANCE REPORT INCLUDED

Case Narrative

Unless otherwise noted, all samples included in this report were received in accordance with protocols referenced in Chapter 62-160, Florida Administrative Code (F.A.C.). Results published in this report pertain only to the samples as submitted to, and received by the laboratory. All times in this report are adjusted to the applicable Eastern Time Zone (EST or EDT).

Results for the following analytical groups are included in this report: Metals and Nutrients.

Scientific notation may be used in reporting very large or small values. Values reported using scientific notation will take the form of the following example: 1.3E+03, which is equivalent to 1.3×10^3 or 1300.

Unless otherwise noted, analytical values for soil and sediment samples are reported on a dry weight basis, and analytical values for waste and tissue samples are reported on a wet weight basis.

Results for TNI accredited tests met requirements established by The NELAC Institute. A double asterisk (**) is used to indicate an analyte/matrix/method for which the laboratory is not TNI accredited by the Florida Department of Health Environmental Laboratory Certification Program or where accreditation for that field of testing is not applicable.

Any significant anomalies or deviations from established protocols are documented in Non-Conformance Reports, which, where appropriate, are included within this analytical report. Additional comments related to specific analytical tests may be included as remarks following the analytical results for each sample. Such comments and remarks are for informational purposes only and are not intended to convey judgement about the usability of the reported data.

A quality control report on the performance of the test method for the submitted samples is included. Uncertainty associated with the analytical results contained in this report can be estimated from the reported quality assurance results and from published quality control acceptance limits for each analytical test. Matrix quality control results (matrix spike recoveries and matrix sample precision) pertain only to the matrix sample tested and do not necessarily reflect test method performance for other samples.

Typical matrix quality control (QC) measurements may include matrix spike recovery, matrix spike duplicate recovery, matrix spike precision and matrix sample precision. Not all matrix QC results may be available or reportable; where they are not an explanation is provided. Typical reasons for unavailable QC results include, but are not limited to, a) insufficient matrix sample to perform some or all QC measurements; b) analyte concentration in the sample replicated was too low for a meaningful measurement of precision and c) analyte concentration in the matrix sample spiked was too high (relative to the amount of analyte spiked) for a meaningful measurement of recovery. Where matrix QC results are unavailable, other method performance metrics (e.g., LCS recovery, LCS precision, surrogate recovery) may be used to assess performance of the method. Comments explaining any missing QC measurements are not intended to convey any adverse conclusions about the quality of the reported data.

Precision is reported as relative percent difference unless otherwise noted.

Quality Control codes as defined below may be used in this report to indicate results that are associated with one or more quality control elements which did not fall within established test method criteria. Such results may be qualified as estimates using a J qualifier as required by 62-160 F.A.C. Explanations are included in the report for any results that were reported as estimates for other reasons.

QC Codes used in this report may include:

LCS – Recovery for the batch Laboratory Control Sample (LCS) was outside existing control limits;
MS – Recovery for the batch matrix spike (MS) was outside existing control limits;
CCV – Recovery for a continuing calibration verification (CCV) standard was outside existing control limits;
SUR – Recovery of a surrogate (SUR) for associated analytes was outside existing control limits;
RPD – The precision, measured as relative percent difference (RPD), of batch replicate measurements was outside existing control limits;
RSD – The precision, measured as relative standard deviation (RSD), of batch replicate measurements was outside existing control limits;
SMP – Sample - used precision derived from replicate analyses of a sample;

The following data qualifiers are used, where applicable, in this report as specified in 62-160 F.A.C.

A - Value reported is the mean of two or more determinations.
B - Results based on colony counts outside the acceptable range.
I - The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit.
J - Estimated value and/or the analysis did not meet established quality control criteria.
K - Actual value is known to be less than value given.
L - Actual value is known to be greater than value given.
N - Presumptive evidence of presence of material.
O - Sampled, but analysis lost or not performed.
Q - Sample held beyond normal holding time.
T - Value reported is less than the criterion of detection.
U - Material was analyzed for but not detected. The reported value is the method detection limit for the sample analyzed.
V - Analyte was detected in both sample and method blank.
X - Too few individuals to calculate SCI value.
Y - The laboratory analysis was from an unpreserved or improperly preserved sample. The data may not be accurate.
Z - Colonies were too numerous to count (TNTC).

Quality control information from overflow laboratories may not be included in this report. Please refer to the associated report from the overflow laboratory for additional information.

Sample Location: Wiggins Branch below Highway 29 **Collection Date/Time: 07/25/2022 10:30**

Field ID: G4NW0163 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2343892	DEP SOP: NU-094-1	Color (true)	39		PCU	P417182	
	EPA 180.1 Rev. 2.0	Turbidity	3.6	A	NTU	P417194	
	EPA 300.0 Rev. 2.1	Chloride	2.9		mg Cl/L	P417635	
		Sulfate	0.97		mg SO4/L	P417640	
	SM 2320 B-2011	Total Alkalinity	4.2		mg CaCO3/L	P417437	
	SM 2540 C-2011	TDS	27		mg/L	P417661	
	SM 2540 D-2011	TSS	3	I	mg/L	P417664	
	SM 4500-F- C-2011	Fluoride	0.035	U	mg F/L	P417442	
2343894	EPA 350.1 Rev. 2.0	Ammonia-N	0.056		mg N/L	P417312	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.49		mg N/L	P417280	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.023		mg N/L	P417401	
	EPA 365.1 Rev. 2.0	Total-P	0.022		mg P/L	P417343	
	SM 5310 B-2011	Organic Carbon	6.1		mg C/L	P417392	
2343909	EPA 200.7 Rev. 4.4	Calcium	2.12		mg/L	P417203	
		Iron	1.07E+03		ug/L	P417203	
		Magnesium	0.81		mg/L	P417203	
		Potassium	0.30	U	mg/L	P417203	
		Sodium	1.7	I	mg/L	P417203	
		Strontium	5.9	I	ug/L	P417203	
		Tin	3.0	U	ug/L	P417203	
		Titanium	0.85	I	ug/L	P417203	
		Vanadium	2.0	U	ug/L	P417203	
		Zinc	5.0	U	ug/L	P417203	
	EPA 200.8 Rev. 5.4	Aluminum	120		ug/L	P417203	
		Antimony	0.050	U	ug/L	P417203	
		Arsenic	0.49		ug/L	P417203	
		Barium	24.5		ug/L	P417203	
		Beryllium	0.031	I	ug/L	P417203	
		Boron	11.1		ug/L	P417203	
		Cadmium	0.020	U	ug/L	P417203	
		Chromium	0.40	U	ug/L	P417203	
		Cobalt	0.265		ug/L	P417203	
		Copper	0.40	U	ug/L	P417203	
		Lead	0.20	I	ug/L	P417203	
		Manganese	35.0		ug/L	P417203	
		Molybdenum	0.15	U	ug/L	P417203	
		Nickel	0.51	I	ug/L	P417203	
		Selenium	0.20	U	ug/L	P417203	
		Silver	0.010	U	ug/L	P417203	
		Thallium	0.10	U	ug/L	P417203	
	SM 2340 B-2011	Hardness	8.6		mg/L	P417203	

Ref. Method and Comment:
EPA 351.2 Rev. 2.0: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: Big Escambia Creek downstream of Fannie Rd Collection Date/Time: 07/25/2022 11:05

Field ID: G4NW0421 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2343890	DEP SOP: NU-094-1	Color (true)	42		PCU	P417182	
	EPA 180.1 Rev. 2.0	Turbidity	10		NTU	P417193	
	EPA 300.0 Rev. 2.1	Chloride	4.3	J	mg Cl/L	P417634	
		Sulfate	0.81	J	mg SO4/L	P417639	
	SM 2320 B-2011	Total Alkalinity	4.1		mg CaCO3/L	P417437	
	SM 2540 C-2011	TDS	35		mg/L	P417661	
	SM 2540 D-2011	TSS	10		mg/L	P417664	
	SM 4500-F- C-2011	Fluoride	0.035	U	mg F/L	P417442	
2343891	EPA 350.1 Rev. 2.0	Ammonia-N	0.012		mg N/L	P417260	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.40		mg N/L	P417280	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.54		mg N/L	P417401	
	EPA 365.1 Rev. 2.0	Total-P	0.025		mg P/L	P417343	
	SM 5310 B-2011	Organic Carbon	3.4		mg C/L	P417295	
2343908	EPA 200.7 Rev. 4.4	Calcium	2.03		mg/L	P417203	
		Iron	960		ug/L	P417203	
		Magnesium	1.18		mg/L	P417203	
		Potassium	0.67	I	mg/L	P417203	
		Sodium	2.4		mg/L	P417203	
		Strontium	18.0		ug/L	P417203	
		Tin	3.0	U	ug/L	P417203	
		Titanium	1.3	I	ug/L	P417203	
		Vanadium	2.0	U	ug/L	P417203	
		Zinc	5.0	U	ug/L	P417203	
	EPA 200.8 Rev. 5.4	Aluminum	168		ug/L	P417203	
		Antimony	0.050	U	ug/L	P417203	
		Arsenic	0.47		ug/L	P417203	
		Barium	36.6		ug/L	P417203	
		Beryllium	0.069		ug/L	P417203	
		Boron	11.1		ug/L	P417203	
		Cadmium	0.020	U	ug/L	P417203	
		Chromium	0.40	U	ug/L	P417203	
		Cobalt	0.894		ug/L	P417203	
		Copper	0.47	I	ug/L	P417203	
		Lead	0.28	I	ug/L	P417203	
		Manganese	40.9		ug/L	P417203	
		Molybdenum	0.15	U	ug/L	P417203	
		Nickel	0.83	I	ug/L	P417203	
		Selenium	0.20	U	ug/L	P417203	
		Silver	0.010	U	ug/L	P417203	
		Thallium	0.10	U	ug/L	P417203	
	SM 2340 B-2011	Hardness	9.9		mg/L	P417203	

Ref. Method and Comment:
EPA 300.0 Rev. 2.1: Chloride: Cracked sample container, sample integrity may be compromised. See attached NCR.
EPA 300.0 Rev. 2.1: Sulfate: Cracked sample container, sample integrity may be compromised. See attached NCR.
EPA 351.2 Rev. 2.0: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: Little Pine Barren Creek below CR99A **Collection Date/Time: 07/25/2022 12:12**

Field ID: G4NW0192 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2343893	DEP SOP: NU-094-1	Color (true)	60		PCU	P417182	
	EPA 180.1 Rev. 2.0	Turbidity	6.0		NTU	P417194	
	EPA 300.0 Rev. 2.1	Chloride	4.9		mg Cl/L	P417635	
		Sulfate	0.91		mg SO4/L	P417640	
	SM 2320 B-2011	Total Alkalinity	8.0		mg CaCO3/L	P417437	
	SM 2540 C-2011	TDS	38		mg/L	P417661	
	SM 2540 D-2011	TSS	3	I	mg/L	P417664	
	SM 4500-F- C-2011	Fluoride	0.038	I	mg F/L	P417442	
2343895	EPA 350.1 Rev. 2.0	Ammonia-N	0.074		mg N/L	P417388	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.56		mg N/L	P417280	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.41		mg N/L	P417401	
	EPA 365.1 Rev. 2.0	Total-P	0.035		mg P/L	P417343	
	SM 5310 B-2011	Organic Carbon	4.4		mg C/L	P417392	
2343910	EPA 200.7 Rev. 4.4	Calcium	2.56		mg/L	P417203	
		Iron	2.16E+03		ug/L	P417203	
		Magnesium	1.72		mg/L	P417203	
		Potassium	1.8		mg/L	P417203	
		Sodium	2.0		mg/L	P417203	
		Strontium	13.9		ug/L	P417203	
		Tin	3.0	U	ug/L	P417203	
		Titanium	0.85	I	ug/L	P417203	
		Vanadium	2.0	U	ug/L	P417203	
		Zinc	5.0	U	ug/L	P417203	
	EPA 200.8 Rev. 5.4	Aluminum	97		ug/L	P417203	
		Antimony	0.050	U	ug/L	P417203	
		Arsenic	0.75		ug/L	P417203	
		Barium	45.4		ug/L	P417203	
		Beryllium	0.015	I	ug/L	P417203	
		Boron	14.7		ug/L	P417203	
		Cadmium	0.020	U	ug/L	P417203	
		Chromium	0.40	U	ug/L	P417203	
		Cobalt	0.486		ug/L	P417203	
		Copper	0.40	U	ug/L	P417203	
		Lead	0.20	U	ug/L	P417203	
		Manganese	89.0		ug/L	P417203	
		Molybdenum	0.15	U	ug/L	P417203	
		Nickel	0.50	U	ug/L	P417203	
		Selenium	0.20	U	ug/L	P417203	
		Silver	0.010	U	ug/L	P417203	
		Thallium	0.10	U	ug/L	P417203	
	SM 2340 B-2011	Hardness	13.5		mg/L	P417203	

Ref. Method and Comment:
EPA 351.2 Rev. 2.0: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: Little Pine Barren Creek above CR99 **Collection Date/Time: 07/25/2022 12:48**

Field ID: G4NW0420 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2343911	EPA 200.7 Rev. 4.4	Calcium	2.28		mg/L	P417203	
		Iron	2.04E+03		ug/L	P417203	
		Magnesium	1.82		mg/L	P417203	
		Potassium	1.3		mg/L	P417203	
		Sodium	2.2		mg/L	P417203	
		Strontium	16.4		ug/L	P417203	
		Tin	3.0	U	ug/L	P417203	
		Titanium	0.91	I	ug/L	P417203	
		Vanadium	2.0	U	ug/L	P417203	
		Zinc	5.0	U	ug/L	P417203	
	EPA 200.8 Rev. 5.4	Aluminum	84		ug/L	P417203	
		Antimony	0.050	U	ug/L	P417203	
		Arsenic	0.71		ug/L	P417203	
		Barium	57.3		ug/L	P417203	
		Beryllium	0.021	I	ug/L	P417203	
		Boron	11.9		ug/L	P417203	
		Cadmium	0.020	U	ug/L	P417203	
		Chromium	0.40	U	ug/L	P417203	
		Cobalt	0.461		ug/L	P417203	
		Copper	0.40	U	ug/L	P417203	
		Lead	0.20	U	ug/L	P417203	
		Manganese	55.4		ug/L	P417203	
		Molybdenum	0.15	U	ug/L	P417203	
		Nickel	0.50	U	ug/L	P417203	
		Selenium	0.20	U	ug/L	P417203	
		Silver	0.010	U	ug/L	P417203	
		Thallium	0.10	U	ug/L	P417203	
	SM 2340 B-2011	Hardness	13.2		mg/L	P417203	

Sample Location: Brushy Creek Up **Collection Date/Time: 07/25/2022 13:20**

Field ID: G5NW0002 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2343912	EPA 200.7 Rev. 4.4	Calcium	2.24		mg/L	P417203	
		Iron	1.12E+03		ug/L	P417203	
		Magnesium	0.88		mg/L	P417203	
		Potassium	1.0	I	mg/L	P417203	
		Sodium	2.2		mg/L	P417203	
		Strontium	9.7		ug/L	P417203	
		Tin	3.0	U	ug/L	P417203	
		Titanium	3.4		ug/L	P417203	
		Vanadium	2.0	U	ug/L	P417203	
		Zinc	14	I	ug/L	P417203	
	EPA 200.8 Rev. 5.4	Aluminum	599		ug/L	P417203	
		Antimony	0.073	I	ug/L	P417203	
		Arsenic	0.71		ug/L	P417203	
		Barium	29.6		ug/L	P417203	
		Beryllium	0.058		ug/L	P417203	
		Boron	13.7		ug/L	P417203	
		Cadmium	0.025	I	ug/L	P417203	
		Chromium	0.83	I	ug/L	P417203	
		Cobalt	0.600		ug/L	P417203	
		Copper	1.55		ug/L	P417203	
		Lead	0.97		ug/L	P417203	
		Manganese	48.3		ug/L	P417203	
		Molybdenum	0.15	U	ug/L	P417203	
		Nickel	1.8	I	ug/L	P417203	
		Selenium	0.20	U	ug/L	P417203	
		Silver	0.010	U	ug/L	P417203	
		Thallium	0.10	U	ug/L	P417203	
	SM 2340 B-2011	Hardness	9.2		mg/L	P417203	

Ref. Method and Comment:
EPA 200.8 Rev. 5.4: The lead result was confirmed in the undigested sample on 07/29/2022.

Non-Conformance Report

NCR ID: 9492

Event(s)	Job(s)	Sample(s)	Test(s)
NW-DIST-2022-07-26-02	TLH-2022-07-26-86	2343890	

NCR Type: CUSTODY **NCR Category: General**

Observation: Sample dropped in recieving room on 08/01/2022 at 14:00. The cap broke and a small amount of sample volume was lost.

Resolution: Cap replaced, any data generated after this time will need to be qualified.

Authorized by/Date: Kyle Klug 8/8/2022

The Non-Conformance Report details exceptions or problems encountered with the events/jobs/samples/test.
Please address questions to:

Chemistry	Colin Wright	(850) 245-8085
Biology	Cheryl Swanson	(850) 245-8177

Quality Assurance Report
Method Blank Results

Reference Method: DEP SOP: NU-094-1
Batch ID: P417182

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P417193

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P417194

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P417203

Component	Result	Code	Units
Calcium	0.075	U	mg/L
Iron	30	U	ug/L
Magnesium	0.040	U	mg/L
Potassium	0.30	U	mg/L
Sodium	0.50	U	mg/L
Strontium	2.0	U	ug/L
Tin	3.0	U	ug/L
Titanium	0.75	U	ug/L
Vanadium	2.0	U	ug/L
Zinc	5.0	U	ug/L

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P417203

Component	Result	Code	Units
Aluminum	5.0	U	ug/L
Antimony	0.050	U	ug/L
Arsenic	0.050	U	ug/L
Barium	0.20	U	ug/L
Beryllium	0.010	U	ug/L
Boron	2.0	U	ug/L
Cadmium	0.020	U	ug/L
Chromium	0.40	U	ug/L
Cobalt	0.020	U	ug/L
Copper	0.40	U	ug/L
Lead	0.20	U	ug/L
Manganese	0.10	U	ug/L
Molybdenum	0.15	U	ug/L
Nickel	0.50	U	ug/L
Selenium	0.20	U	ug/L
Silver	0.010	U	ug/L
Thallium	0.10	U	ug/L

Quality Assurance Report
Method Blank Results

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P417634

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P417635

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P417639

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P417640

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P417260

Component	Result	Code	Units
Ammonia-N	0.002	U	mg N/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P417312

Component	Result	Code	Units
Ammonia-N	0.002	U	mg N/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P417388

Component	Result	Code	Units
Ammonia-N	0.002	U	mg N/L

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P417280

Component	Result	Code	Units
Kjeldahl Nitrogen	0.080	U	mg N/L

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P417401

Component	Result	Code	Units
NO2NO3-N	0.004	U	mg N/L

Quality Assurance Report
Method Blank Results

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P417343

Component	Result	Code	Units
Total-P	0.002	U	mg P/L

Reference Method: SM 2320 B-2011
Batch ID: P417437

Component	Result	Code	Units
Total Alkalinity	0.65	U	mg CaCO3/L

Reference Method: SM 2540 C-2011
Batch ID: P417661

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-2011
Batch ID: P417664

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500-F- C-2011
Batch ID: P417442

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-2011
Batch ID: P417295

Component	Result	Code	Units
Organic Carbon	0.50	U	mg C/L

Reference Method: SM 5310 B-2011
Batch ID: P417392

Component	Result	Code	Units
Organic Carbon	0.50	U	mg C/L

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: DEP SOP: NU-094-1
Batch ID: P417182

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	102		P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P417193

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Turbidity	97.3		P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P417194

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Turbidity	97.2		P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P417203

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Calcium	107		P	85 - 115
Iron	106		P	85 - 115
Magnesium	108		P	85 - 115
Potassium	102		P	85 - 115
Sodium	110		P	85 - 115
Strontium	97.6		P	85 - 115
Tin	97.7		P	85 - 115
Titanium	99.9		P	85 - 115
Vanadium	98.2		P	85 - 115
Zinc	98.0		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P417203

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Aluminum	99.9		P	85 - 115
Antimony	100		P	85 - 115
Arsenic	98.9		P	85 - 115
Barium	102		P	85 - 115
Beryllium	88.9		P	85 - 115
Boron	102		P	85 - 115
Cadmium	96.8		P	85 - 115
Chromium	98.1		P	85 - 115
Cobalt	99.1		P	85 - 115
Copper	100		P	85 - 115
Lead	93.8		P	85 - 115
Manganese	100		P	85 - 115
Molybdenum	95.7		P	85 - 115
Nickel	99.5		P	85 - 115
Selenium	98.7		P	85 - 115
Silver	97.0		P	85 - 115
Thallium	97.1		P	85 - 115

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P417634

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chloride	94.8		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P417635

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chloride	95.7		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P417639

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	95.0		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P417640

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	95.6		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P417260

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	97.2		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P417312

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	98.2		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P417388

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	97.6		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P417280

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	104		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P417401

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	99.5		P	90 - 110

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P417343

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	99.4		P	90 - 110

Reference Method: SM 2320 B-2011
Batch ID: P417437

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	99.7		P	94 - 106

Reference Method: SM 4500-F- C-2011
Batch ID: P417442

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	104		P	96 - 104

Reference Method: SM 5310 B-2011
Batch ID: P417295

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	95.8		P	85 - 115

Reference Method: SM 5310 B-2011
Batch ID: P417392

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	96.7		P	85 - 115

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P417203

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2343749	Calcium	107		P	80 - 120
2343749	Iron	111		P	80 - 120
2343749	Magnesium	112		P	80 - 120
2343749	Potassium	108		P	80 - 120
2343749	Sodium	100		P	80 - 120
2343749	Strontium	98.2		P	80 - 120
2343749	Tin	102		P	80 - 120
2343749	Titanium	105		P	80 - 120
2343749	Vanadium	104		P	80 - 120
2343749	Zinc	100		P	80 - 120
2343980	Calcium	107	108	P/P	80 - 120
2343980	Iron	110	108	P/P	80 - 120
2343980	Magnesium	111	110	P/P	80 - 120
2343980	Potassium	108	106	P/P	80 - 120
2343980	Sodium	102	102	P/P	80 - 120
2343980	Strontium	100	99.1	P/P	80 - 120
2343980	Tin	99.5	102	P/P	80 - 120
2343980	Titanium	103	104	P/P	80 - 120
2343980	Vanadium	102	103	P/P	80 - 120
2343980	Zinc	100	101	P/P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P417203

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2343749	Aluminum	100		P	80 - 120
2343749	Antimony	103		P	80 - 120
2343749	Arsenic	103		P	80 - 120
2343749	Barium	105		P	80 - 120
2343749	Beryllium	95.2		P	80 - 120
2343749	Boron	104		P	80 - 120
2343749	Cadmium	99.3		P	80 - 120
2343749	Chromium	102		P	80 - 120
2343749	Cobalt	102		P	80 - 120
2343749	Copper	103		P	80 - 120
2343749	Lead	97.2		P	80 - 120
2343749	Manganese	103		P	80 - 120
2343749	Molybdenum	100		P	80 - 120
2343749	Nickel	102		P	80 - 120
2343749	Selenium	101		P	80 - 120
2343749	Silver	99.2		P	80 - 120
2343749	Thallium	102		P	80 - 120
2343980	Aluminum	102	100	P/P	80 - 120
2343980	Antimony	100	100	P/P	80 - 120
2343980	Arsenic	98.3	98.1	P/P	80 - 120
2343980	Barium	102	102	P/P	80 - 120
2343980	Beryllium	89.3	88.6	P/P	80 - 120
2343980	Boron	104	103	P/P	80 - 120
2343980	Cadmium	98.0	97.3	P/P	80 - 120
2343980	Chromium	98.4	99.3	P/P	80 - 120
2343980	Cobalt	98.3	98.6	P/P	80 - 120
2343980	Copper	102	101	P/P	80 - 120

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P417203

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2343980	Lead	94.3	94.4	P/P	80 - 120
2343980	Manganese	100	100	P/P	80 - 120
2343980	Molybdenum	96.1	96.4	P/P	80 - 120
2343980	Nickel	98.7	99.1	P/P	80 - 120
2343980	Selenium	96.7	97.3	P/P	80 - 120
2343980	Silver	97.3	97.1	P/P	80 - 120
2343980	Thallium	98.6	99.9	P/P	80 - 120

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P417634

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2343731	Chloride	99.9		P	90 - 110
2343766	Chloride	95.5		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P417635

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2344108	Chloride	93.2		P	90 - 110
2344177	Chloride	92.8		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P417639

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2343731	Sulfate	99.8		P	90 - 110
2343766	Sulfate	95.7		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P417640

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2344108	Sulfate	93.1		P	90 - 110
2344177	Sulfate	94.4		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P417260

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2343742	Ammonia-N	97.6	99.6	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P417312

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2341915	Ammonia-N	97.6	98.8	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P417388

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P417388

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2344111	Ammonia-N	98.4	99.8	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P417401

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2343855	NO2NO3-N	100	99.5	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P417343

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2343895	Total-P	103	102	P/P	90 - 110

Reference Method: SM 4500-F- C-2011
Batch ID: P417442

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2344107	Fluoride	104	103	P/P	94 - 104

Reference Method: SM 5310 B-2011
Batch ID: P417295

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2343697	Organic Carbon	97.8	98.5	P/P	85 - 115

Reference Method: SM 5310 B-2011
Batch ID: P417392

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2344199	Organic Carbon	98.0	98.3	P/P	85 - 115

Quality Assurance Report
Precision

Reference Method: DEP SOP: NU-094-1
Batch ID: P417182

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2343731	Color (true)	1.87	Sample	P	0 - 20

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P417193

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2343729	Turbidity	6.57	Sample	P	0 - 20

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P417194

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2343892	Turbidity	1.67	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P417203

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2343980	Calcium	0.894	Spike	P	0 - 20
2343980	Iron	1.44	Spike	P	0 - 20
2343980	Magnesium	1.04	Spike	P	0 - 20
2343980	Potassium	1.95	Spike	P	0 - 20
2343980	Sodium	0.323	Spike	P	0 - 20
2343980	Strontium	1.08	Spike	P	0 - 20
2343980	Tin	2.11	Spike	P	0 - 20
2343980	Titanium	0.844	Spike	P	0 - 20
2343980	Vanadium	1.33	Spike	P	0 - 20
2343980	Zinc	1.10	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P417203

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2343980	Aluminum	1.50	Spike	P	0 - 20
2343980	Antimony	0.276	Spike	P	0 - 20
2343980	Arsenic	0.181	Spike	P	0 - 20
2343980	Barium	0.236	Spike	P	0 - 20
2343980	Beryllium	0.753	Spike	P	0 - 20
2343980	Boron	1.45	Spike	P	0 - 20
2343980	Cadmium	0.711	Spike	P	0 - 20
2343980	Chromium	0.858	Spike	P	0 - 20
2343980	Cobalt	0.351	Spike	P	0 - 20
2343980	Copper	0.420	Spike	P	0 - 20
2343980	Lead	0.0509	Spike	P	0 - 20
2343980	Manganese	0.0939	Spike	P	0 - 20
2343980	Molybdenum	0.289	Spike	P	0 - 20
2343980	Nickel	0.399	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P417203

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2343980	Selenium	0.648	Spike	P	0 - 20
2343980	Silver	0.247	Spike	P	0 - 20
2343980	Thallium	1.28	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P417634

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2343731	Chloride	2.06	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P417635

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2344108	Chloride	0.0	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P417639

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2343731	Sulfate	0.898	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P417640

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2344108	Sulfate	0.275	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P417260

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2343742	Ammonia-N	1.90	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P417312

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2341915	Ammonia-N	1.12	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P417388

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits

Quality Assurance Report
Precision

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P417388

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2344111	Ammonia-N	0.857	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P417280

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2343918	Kjeldahl Nitrogen	2.63	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P417401

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2343855	NO2NO3-N	1.00	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P417343

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2343895	Total-P	0.611	Spike	P	0 - 20

Reference Method: SM 2320 B-2011
Batch ID: P417437

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2344107	Total Alkalinity	0.908	Sample	P	0 - 3.8

Reference Method: SM 2540 C-2011
Batch ID: P417661

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2344023	TDS	7.43	Sample	P	0 - 10

Reference Method: SM 2540 D-2011
Batch ID: P417664

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2344023	TSS	3.92	Sample	P	0 - 10

Reference Method: SM 4500-F- C-2011
Batch ID: P417442

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2344107	Fluoride	1.01	Spike	P	0 - 1.6

Quality Assurance Report
Precision

Reference Method: SM 5310 B-2011
Batch ID: P417295

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2343697	Organic Carbon	0.544	Spike	P	0 - 20

Reference Method: SM 5310 B-2011
Batch ID: P417392

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2344199	Organic Carbon	0.154	Spike	P	0 - 20

* Sample, spike and/or laboratory control sample precision (LCS) is reported.

Quality Assurance Report
Calibration Verification

Reference Method: DEP SOP: NU-094-1
Run ID: A113712
Included Lab Sample IDs: 2343890, 2343892, 2343893

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	101	102	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A113715
Included Lab Sample IDs: 2343890, 2343892, 2343893

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	100	100	P/P	95 - 105

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A113739
Included Lab Sample IDs: 2343891

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	99.0	97.8	P/P	90 - 110

Reference Method: SM 5310 B-2011
Run ID: A113757
Included Lab Sample IDs: 2343891

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	97.6	98.0	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A113763
Included Lab Sample IDs: 2343894

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	99.6	101	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A113786
Included Lab Sample IDs: 2343908, 2343909, 2343910, 2343911, 2343912

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aluminum	102	99.4	P/P	90 - 110
Antimony	98.5	98.4	P/P	90 - 110
Arsenic	99.6	99.5	P/P	90 - 110
Barium	99.6	99.4	P/P	90 - 110
Beryllium	93.0	95.1	P/P	90 - 110
Boron	105	97.8	P/P	90 - 110
Cadmium	100	99.5	P/P	90 - 110
Chromium	100	101	P/P	90 - 110
Cobalt	99.8	99.8	P/P	90 - 110
Copper	102	102	P/P	90 - 110
Lead	93.9	93.0	P/P	90 - 110
Manganese	102	102	P/P	90 - 110
Molybdenum	97.1	96.5	P/P	90 - 110
Nickel	100	100	P/P	90 - 110
Selenium	98.2	97.8	P/P	90 - 110
Silver	99.1	98.5	P/P	90 - 110

Quality Assurance Report
Calibration Verification

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A113786
Included Lab Sample IDs: 2343908, 2343909, 2343910, 2343911, 2343912

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Thallium	98.2	96.1	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A113790
Included Lab Sample IDs: 2343895

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	99.4	98.9	P/P	90 - 110

Reference Method: SM 5310 B-2011
Run ID: A113791
Included Lab Sample IDs: 2343894, 2343895

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	98.2	96.8	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A113795
Included Lab Sample IDs: 2343891, 2343894, 2343895

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	101	100	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A113800
Included Lab Sample IDs: 2343891, 2343894, 2343895

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	102	101	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A113807
Included Lab Sample IDs: 2343891, 2343894, 2343895

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	102	107	P/P	90 - 110

Reference Method: SM 2320 B-2011
Run ID: A113811
Included Lab Sample IDs: 2343890, 2343892, 2343893

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	97.6	99.4	P/P	90 - 110

Reference Method: SM 4500-F- C-2011
Run ID: A113811
Included Lab Sample IDs: 2343890, 2343892, 2343893

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	105	105	P/P	90 - 110

Quality Assurance Report
Calibration Verification

Reference Method: EPA 200.7 Rev. 4.4
Run ID: A113865
Included Lab Sample IDs: 2343908, 2343909, 2343910, 2343911, 2343912

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Calcium	103	102	P/P	90 - 110
Iron	102	102	P/P	90 - 110
Magnesium	103	103	P/P	90 - 110
Potassium	102	101	P/P	90 - 110
Sodium	100	97.4	P/P	90 - 110
Strontium	97.8	95.8	P/P	90 - 110
Tin	97.1	99.0	P/P	90 - 110
Titanium	97.9	100	P/P	90 - 110
Vanadium	97.1	99.2	P/P	90 - 110
Zinc	94.2	95.2	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A113902
Included Lab Sample IDs: 2343890, 2343892, 2343893

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	94.7	95.5	P/P	90 - 110
Chloride	96.9	94.7	P/P	90 - 110
Sulfate	93.6	94.0	P/P	90 - 110
Sulfate	96.1	93.6	P/P	90 - 110

* Pass/Fail determinations are made for each bracketing calibration verification check.
Control limits for initial calibration checks may be different from those for continuing checks, depending on method requirements.
Where they are different, both control limits are provided.

Quality Assurance Report
Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery			Precision		
						LCS	SMP	MS
DEP SOP: NU-094-1	Color (true)	102					1.87	
EPA 180.1 Rev. 2.0	Turbidity	97.3					6.57	
	Turbidity	97.2					1.67	
EPA 200.7 Rev. 4.4	Calcium	107	107	108	107			0.894
	Iron	106	110	108	111			1.44
	Magnesium	108	111	110	112			1.04
	Potassium	102	108	106	108			1.95
	Sodium	110	102	102	100			0.323
	Strontium	97.6	100	99.1	98.2			1.08
	Tin	97.7	99.5	102	102			2.11
	Titanium	99.9	103	104	105			0.844
	Vanadium	98.2	102	103	104			1.33
	Zinc	98.0	100	101	100			1.10
EPA 200.8 Rev. 5.4	Aluminum	99.9	100	102	100			1.50
	Antimony	100	103	100	100			0.276
	Arsenic	98.9	103	98.3	98.1			0.181
	Barium	102	105	102	102			0.236
	Beryllium	88.9	95.2	89.3	88.6			0.753
	Boron	102	104	104	103			1.45
	Cadmium	96.8	99.3	98.0	97.3			0.711
	Chromium	98.1	102	98.4	99.3			0.858
	Cobalt	99.1	102	98.3	98.6			0.351
	Copper	100	103	102	101			0.420
	Lead	93.8	97.2	94.3	94.4			0.0509
	Manganese	100	103	100	100			0.0939
	Molybdenum	95.7	100	96.1	96.4			0.289
	Nickel	99.5	102	98.7	99.1			0.399
	Selenium	98.7	101	96.7	97.3			0.648
	Silver	97.0	99.2	97.3	97.1			0.247
	Thallium	97.1	102	98.6	99.9			1.28
EPA 300.0 Rev. 2.1	Chloride	94.8	99.9	95.5			2.06	
	Chloride	95.7	93.2	92.8			0.0	
	Sulfate	95.0	99.8	95.7			0.898	
	Sulfate	95.6	93.1	94.4			0.275	
EPA 350.1 Rev. 2.0	Ammonia-N	97.2	97.6	99.6				1.90
	Ammonia-N	98.2	97.6	98.8				1.12
	Ammonia-N	97.6	98.4	99.8				0.857
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	104						2.63
EPA 353.2 Rev. 2.0	NO2NO3-N	99.5	100	99.5				1.00
EPA 365.1 Rev. 2.0	Total-P	99.4	103	102				0.611
SM 2320 B-2011	Total Alkalinity	99.7					0.908	
SM 2540 C-2011	TDS						7.43	
SM 2540 D-2011	TSS						3.92	
SM 4500-F- C-2011	Fluoride	104	104	103				1.01
SM 5310 B-2011	Organic Carbon	95.8	97.8	98.5				0.544
	Organic Carbon	96.7	98.0	98.3				0.154

Reference Method Descriptions

Method	Description	Associated Samples
DEP SOP: NU-094-1	True Color measured at 450 nm (not valid for NPDES monitoring)	2343890, 2343892, 2343893
EPA 180.1 Rev. 2.0	Turbidity in aqueous matrices	2343890, 2343892, 2343893

Reference Method Descriptions

Method	Description	Associated Samples
EPA 200.7 Rev. 4.4	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2343908, 2343909, 2343910, 2343911, 2343912
EPA 200.8 Rev. 5.4	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2343908, 2343909, 2343910, 2343911, 2343912
EPA 300.0 Rev. 2.1	Chloride in aqueous matrices	2343890, 2343892, 2343893
EPA 300.0 Rev. 2.1	Sulfate in aqueous matrices	2343890, 2343892, 2343893
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2343891, 2343894, 2343895
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2343891, 2343894, 2343895
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2343891, 2343894, 2343895
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2343891, 2343894, 2343895
SM 2320 B-2011	Alkalinity in aqueous matrices as mg CaCO3/L	2343890, 2343892, 2343893
SM 2340 B-2011	Hardness by calculation, in aqueous matrices, reported as mg/L CaCO3	2343908, 2343909, 2343910, 2343911, 2343912
SM 2540 C-2011	Total Dissolved Solids in aqueous matrices	2343890, 2343892, 2343893
SM 2540 D-2011	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2343890, 2343892, 2343893
SM 4500-F- C-2011	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2343890, 2343892, 2343893
SM 5310 B-2011	Nonpurgeable Organic Carbon in aqueous matrices	2343891, 2343894, 2343895

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
DEP SOP: NU-094-1	07/26/2022			07/26/2022 15:17	Anna M. Plaviak	2343890
	07/26/2022			07/26/2022 15:18	Anna M. Plaviak	2343892
	07/26/2022			07/26/2022 15:19	Anna M. Plaviak	2343893
EPA 180.1 Rev. 2.0	07/26/2022			07/26/2022 14:39	Khloe J Berg	2343890
	07/26/2022			07/26/2022 14:45	Khloe J Berg	2343892
	07/26/2022			07/26/2022 14:46	Khloe J Berg	2343893
EPA 200.7 Rev. 4.4	07/26/2022	07/27/2022 09:35	Mackenzie Hunt	08/02/2022 18:51	Alexander Thompson	2343908
	07/26/2022	07/27/2022 09:35	Mackenzie Hunt	08/02/2022 18:56	Alexander Thompson	2343909
	07/26/2022	07/27/2022 09:35	Mackenzie Hunt	08/02/2022 19:00	Alexander Thompson	2343910
	07/26/2022	07/27/2022 09:35	Mackenzie Hunt	08/02/2022 19:05	Alexander Thompson	2343911
	07/26/2022	07/27/2022 09:35	Mackenzie Hunt	08/02/2022 19:10	Alexander Thompson	2343912
EPA 200.8 Rev. 5.4	07/26/2022	07/27/2022 09:35	Mackenzie Hunt	07/28/2022 23:02	Emily M Philpot	2343908
	07/26/2022	07/27/2022 09:35	Mackenzie Hunt	07/28/2022 23:11	Emily M Philpot	2343909
	07/26/2022	07/27/2022 09:35	Mackenzie Hunt	07/28/2022 23:20	Emily M Philpot	2343910
	07/26/2022	07/27/2022 09:35	Mackenzie Hunt	07/28/2022 23:29	Emily M Philpot	2343911
	07/26/2022	07/27/2022 09:35	Mackenzie Hunt	07/28/2022 23:38	Emily M Philpot	2343912
EPA 300.0 Rev. 2.1	07/26/2022			08/03/2022 18:42	Anna M. Plaviak	2343890
	07/26/2022			08/03/2022 20:42	Anna M. Plaviak	2343892
	07/26/2022			08/03/2022 20:54	Anna M. Plaviak	2343893
EPA 350.1 Rev. 2.0	07/26/2022			07/27/2022 12:51	Judith K. Clark	2343891
	07/26/2022			07/28/2022 10:46	Ping Hua	2343894
	07/26/2022			07/29/2022 09:33	Ping Hua	2343895
EPA 351.2 Rev. 2.0	07/26/2022	07/28/2022 16:20	Simonne.V. Calhoun	07/29/2022 15:28	Samantha L Bates	2343891
	07/26/2022	07/28/2022 16:20	Simonne.V. Calhoun	07/29/2022 15:30	Samantha L Bates	2343894
	07/26/2022	07/28/2022 16:20	Simonne.V. Calhoun	07/29/2022 15:31	Samantha L Bates	2343895
EPA 353.2 Rev. 2.0	07/26/2022			07/29/2022 10:07	Beverly Y. Sanders	2343891
	07/26/2022			07/29/2022 10:08	Beverly Y. Sanders	2343894
	07/26/2022			07/29/2022 10:09	Beverly Y. Sanders	2343895
EPA 365.1 Rev. 2.0	07/26/2022	07/28/2022 17:50	Adam P Silver	07/29/2022 13:58	James L Waggerby	2343895
	07/26/2022	07/28/2022 17:50	Adam P Silver	07/29/2022 14:00	James L Waggerby	2343891
	07/26/2022	07/28/2022 17:50	Adam P Silver	07/29/2022 14:01	James L Waggerby	2343894
SM 2320 B-2011	07/26/2022			07/30/2022 13:40	Adam P Silver	2343890
	07/26/2022			07/30/2022 13:51	Adam P Silver	2343892
	07/26/2022			07/30/2022 14:03	Adam P Silver	2343893
SM 2340 B-2011	07/26/2022			08/02/2022 18:51	Alexander Thompson	2343908
	07/26/2022			08/02/2022 18:56	Alexander Thompson	2343909
	07/26/2022			08/02/2022 19:00	Alexander Thompson	2343910
	07/26/2022			08/02/2022 19:05	Alexander Thompson	2343911
	07/26/2022			08/02/2022 19:10	Alexander Thompson	2343912
SM 2540 C-2011	07/26/2022			07/29/2022 15:04	Yijie Li	2343890, 2343892, 2343893

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
SM 2540 D-2011	07/26/2022			07/29/2022 15:04	Yijie Li	2343890, 2343892, 2343893
SM 4500-F- C-2011	07/26/2022			07/30/2022 13:40	Adam P Silver	2343890
	07/26/2022			07/30/2022 13:51	Adam P Silver	2343892
	07/26/2022			07/30/2022 14:03	Adam P Silver	2343893
SM 5310 B-2011	07/26/2022			07/28/2022 06:25	Khloe J Berg	2343891
	07/26/2022			07/28/2022 18:09	Khloe J Berg	2343894
	07/26/2022			07/28/2022 18:25	Khloe J Berg	2343895